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Studies of Physio-Chemical Properties of Pandu Pindara Tirth Pond Water, Jind (Haryana)

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Abstract – Quality of water is an important criterion for evaluating the suitability of water for drinking and bathing. Water quality of Pandu Pindara Tirth District Jind (Haryana) was studied for a period of one week before, on amavsya and one week after amavasya with an objective to assess the water quality status. The water quality parameters considered in the present study were colour, odour, temperature, pH, electrical conductivity, total dissolved solids, total hardness, dissolved oxygen. Their results were compared with BIS drinking water standards.

Keywords: Tirth Pond Water, Physico-Chemical Parameters, BIS- Drinking Water Standards.

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I. INTRODUCTION

Water is an extremely important aspect of our daily life. We use water for various purposes like drinking, cooking, bathing and contribute in many activities involving water. It is essential for all extent of life. Water is one of the lavishly offered substances in nature. It is an important and life supporting liquid to human and is vital for the survival of all the organisms. Some of the major contributors are Eletta and Adekola(2005), Kiran (2010), Raut *et.al;*(2011), Naik *et.al;* (2012), Bahekar and There (2013), Mahajan and Tank (2013) who have studied the physico-chemical parameters of the various water bodies.

The physical parameters like temperature, turbidity of water play a significant role on aquatic life. They determine the type of habitat of organisms that can live there. In this context the physio-chemical parameters of pandu pindara tirth pond water such as Temperature, Turbidity, pH, TDS, Total Alkalinity, Total Hardness, Chloride, Phosphate, and Nitrate) of water before attempting to study the animals and plants living in it. Water quality changes continuously in accordance with the physical and biological parameters after bathing. The present study aims at acquiring the first-hand knowledge of the water quality of pandu pindara tirth pond water in order to assess its prospectives.

II. STUDY AREA

Pandu Pindara Tirth pond is situated about 6.5 km from Jind, Haryana (india). It is located at 29.32°N 76.32°E.It has an average elevation of 227 metres (744 feet). According to a legend, the Pandavas offered here pinds to their forefathers and hence the popular name of the village is Pandu Pindara. A fair is held on Somavati Amavas. It is one of the sixty seven thirths under Kurukshetra Bhumi. Related to Mahabharata era, when all Karvas were died in war, Pandvas offered Pinds (in small spherical form made of wheat & maize powder) for their Sadgati (Nirwana). On every month on the day of Amavsya (especially on Somvati Amavasya) people from various places of Haryana, Punjab & Delhi come here for offering pinds for their forefathers Sadgati. This is also known as Som Tirth as mentioned in Puranas and vedas.

III. METHODOLOGY

The water samples were collected from the selected sampling sites in the early morning between upto 10 A.M and taken in precleaned bottles. The test which has to be conducted at sites like temperature, turbidity, colour and pH were immediately done at site and the rest of the parameters of the collected water samples were studied in the laboratory within 6 hours which is kept in an ice box. All parameters were analyzed as per the standard methods of APHA (1998)

IV. RESULTS AND DISCUSSION

Sr. No.	Temp.	Odour	Colour	pH
Sample 1	23	Odourless	clear	7.2
Sample 2	25	Odourless	clear	7.4
Sample 3	26	Odourless	clear	8.1
Sample 4	21	Odourless	clear	8.2
Sample 5	22	Odourless	clear	8.0

Table 1 shows the range of different physico-chemical parameters studied on spot are important to decide the water quality of pond. The values are also compared with quality standards as proposed by BIS (1991 and 2012).

4.1 TEMPERATURE

Temperature are very important factor in understanding the physical, chemical and biological activities which are depends on by the variation of temperature. In the present study the water temperature range varies between 21to 26. A temperature of about 40°C is permissible limit for drinking water (BIS 1991). Hence it can be concluded that the water temperature of pandu pindara tirth pond is suitable for mass bathing purpose.

4.2 ODOUR

All the five water samples were odourless. It is agreeable according to BIS standards. Odour in water is caused mainly by the presence of organic substances and increased biological activity. Attempts should always be made to correct an odour problem.

4.3 COLOUR

The water was clear. Any changes in the colour of water and appearance of new colours serve as indicators that further investigation is needed.

4.3 PH

The present study shows the pH ranging between 7.2 and 8.2. pH range from 6.5 to 7.5 is most favorable and permissible for production in a water body. BIS recommendation of pH is 6.5- 8.5. In the current study the pH range is a safe for drinking and bathing purposes.

Sr. No.	TDS	DO	Alkalinity	Total Hardness
Sample 1	385	11.2	129	132.2
Sample 2	392	9.3	145	134.0
Sample 3	351	10.4	171	116.8
Sample 4	540	6.8	193	178.5
Sample 5	630	7.0	263	231.1

Table 2 shows the range of different physico-chemical parameters studied in the laboratory important to deciding the water quality of pond. The values are also compared with quality standards as proposed by BIS (1991 and 2012).

4.4 TOTAL DISSOLVED SOLIDS

In the present study TDS varied from 351 mg/l to 630 mg/l. The BIS standards has set desirable limit of TDS value to be 500 mg/l in potable water. However the permissible limit is 2000 mg/l in the absence of any alternative source in water. Water at a TDS level of above 500 mg/l is unsuitable for flora and tastes unpleasant to drink. In the present study TDS values were found both well within the standard permissible limit which accounts for its palatability.

4.5 ALKALINITY

In the present study the total alkalinity ranged from 129 mg/l to 263 mg/l. BIS standards has set the desirable limit of alkalinity for drinking water to be 200 mg/l and the permissible value has been prescribed to be 600 mg/l in the absence of any alternative source. In this study the total alkalinity values was found to be well within the standard permissible limit of BIS standards.

4.6 TOTAL HARDNESS

In the present study the total hardness value ranged from 116.8 mg/l to 231.1 mg/l. The standard permissible limit of total hardness value of drinking water set by BIS (1991) is 300 mg/l. This proves that the water of Tirth is suitable for the drinking and bathing.

4.7 CONCLUSION

The present study show detailed physico-chemical parameters and quality of water in Pandu Pindara Tirth. The present investigation indicates that all parameters (except turbidity) were within the permissible limits as per standards proposed by BIS

(1991). All the parameters are quite suitable mass bathinh and cattle drinking purposes.

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